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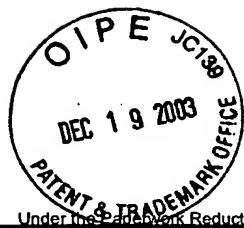
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PTO/SB/21 (08-03)

Approved for use through 08/30/2003. OMB 0651-0031  
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

## TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

		Application Number	10/707,417
		Filing Date	12/12/2003
		First Named Inventor	Daw-I Wang
		Art Unit	
		Examiner Name	
Total Number of Pages in This Submission	3	Attorney Docket Number	ALIP0032USA

### ENCLOSURES (Check all that apply)

<input checked="" type="checkbox"/> Fee Transmittal Form <input type="checkbox"/> Fee Attached <input type="checkbox"/> Amendment/Reply <input type="checkbox"/> After Final <input type="checkbox"/> Affidavits/declaration(s) <input type="checkbox"/> Extension of Time Request <input type="checkbox"/> Express Abandonment Request <input type="checkbox"/> Information Disclosure Statement <input checked="" type="checkbox"/> Certified Copy of Priority Document(s) <input type="checkbox"/> Response to Missing Parts/ Incomplete Application <input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53	<input type="checkbox"/> Drawing(s) <input type="checkbox"/> Licensing-related Papers <input type="checkbox"/> Petition <input type="checkbox"/> Petition to Convert to a Provisional Application <input type="checkbox"/> Power of Attorney, Revocation <input type="checkbox"/> Change of Correspondence Address <input type="checkbox"/> Terminal Disclaimer <input type="checkbox"/> Request for Refund <input type="checkbox"/> CD, Number of CD(s) _____	<input type="checkbox"/> After Allowance communication to Technology Center (TC) <input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences <input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief) <input type="checkbox"/> Proprietary Information <input type="checkbox"/> Status Letter <input type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Remarks _____		

### SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm or Individual name	Winston Hsu, Reg. No.: 41,526
Signature	
Date	12/16/2003

### CERTIFICATE OF TRANSMISSION/MAILING

I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on the date shown below.

Typed or printed name		
Signature	Date	

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# FEE TRANSMITTAL

## for FY 2004

Effective 10/01/2003. Patent fees are subject to annual revision.

 Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT (\$ 0.00)

## Complete if Known

Application Number	10/707,417
Filing Date	12/12/2003
First Named Inventor	Daw-I Wang
Examiner Name	
Art Unit	
Attorney Docket No.	ALIP0032USA

## METHOD OF PAYMENT (check all that apply)

 Check  Credit card  Money Order  Other  None

 Deposit Account:

Deposit Account Number 50-0801  
Deposit Account Name

The Director is authorized to: (check all that apply)

Charge fee(s) indicated below  Credit any overpayments  
 Charge any additional fee(s) or any underpayment of fee(s)  
 Charge fee(s) indicated below, except for the filing fee to the above-identified deposit account.

## FEE CALCULATION

## 1. BASIC FILING FEE

Large Entity	Small Entity	Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1001 770	2001 385			Utility filing fee	
1002 340	2002 170			Design filing fee	
1003 530	2003 265			Plant filing fee	
1004 770	2004 385			Reissue filing fee	
1005 160	2005 80			Provisional filing fee	
<b>SUBTOTAL (1)</b>		(\$ 0.00)			

## 2. EXTRA CLAIM FEES FOR UTILITY AND REISSUE

Total Claims	Independent Claims	Multiple Dependent	Fee from Extra Claims below	Fee Paid

Large Entity	Small Entity	Fee Description
1202 18	2202 9	Claims in excess of 20
1201 86	2201 43	Independent claims in excess of 3
1203 290	2203 145	Multiple dependent claim, if not paid
1204 86	2204 43	** Reissue independent claims over original patent
1205 18	2205 9	** Reissue claims in excess of 20 and over original patent
<b>SUBTOTAL (2)</b>		(\$ 0.00)

\*\*or number previously paid, if greater; For Reissues, see above

## 3. ADDITIONAL FEES

Large Entity	Small Entity	Fee Code (\$)	Fee Code (\$)	Fee Description	Fee Paid
1051 130	2051 65			Surcharge - late filing fee or oath	
1052 50	2052 25			Surcharge - late provisional filing fee or cover sheet	
1053 130	1053 130			Non-English specification	
1812 2,520	1812 2,520			For filing a request for ex parte reexamination	
1804 920*	1804 920*			Requesting publication of SIR prior to Examiner action	
1805 1,840*	1805 1,840*			Requesting publication of SIR after Examiner action	
1251 110	2251 55			Extension for reply within first month	
1252 420	2252 210			Extension for reply within second month	
1253 950	2253 475			Extension for reply within third month	
1254 1,480	2254 740			Extension for reply within fourth month	
1255 2,010	2255 1,005			Extension for reply within fifth month	
1401 330	2401 165			Notice of Appeal	
1402 330	2402 165			Filing a brief in support of an appeal	
1403 290	2403 145			Request for oral hearing	
1451 1,510	1451 1,510			Petition to institute a public use proceeding	
1452 110	2452 55			Petition to revive - unavoidable	
1453 1,330	2453 665			Petition to revive - unintentional	
1501 1,330	2501 665			Utility issue fee (or reissue)	
1502 480	2502 240			Design issue fee	
1503 640	2503 320			Plant issue fee	
1460 130	1460 130			Petitions to the Commissioner	
1807 50	1807 50			Processing fee under 37 CFR 1.17(q)	
1806 180	1806 180			Submission of Information Disclosure Stmt	
8021 40	8021 40			Recording each patent assignment per property (times number of properties)	
1809 770	2809 385			Filing a submission after final rejection (37 CFR 1.129(a))	
1810 770	2810 385			For each additional invention to be examined (37 CFR 1.129(b))	
1801 770	2801 385			Request for Continued Examination (RCE)	
1802 900	1802 900			Request for expedited examination of a design application	
Other fee (specify) _____					

\*Reduced by Basic Filing Fee Paid

SUBTOTAL (3) (\$ 0.00)

(Complete if applicable)

Name (Print/Type)	Winston Hsu	Registration No. (Attorney/Agent)	41,526	Telephone	886289237350
Signature	<i>Winston Hsu</i>			Date	12/16/2003

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PTO/SB/02B (11-00)

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## **DECLARATION — Supplemental Priority Data Sheet**

### Additional foreign applications:

Burden Hour Statement: This form is estimated to take 21 minutes to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.



# 中華民國經濟部智慧財產局

INTELLECTUAL PROPERTY OFFICE  
MINISTRY OF ECONOMIC AFFAIRS  
REPUBLIC OF CHINA

茲證明所附文件，係本局存檔中原申請案的副本，正確無訛，  
其申請資料如下：

This is to certify that annexed is a true copy from the records of this  
office of the application as originally filed which is identified hereunder:

申 請 日 : 西元 2003 年 10 月 09 日  
Application Date

申 請 案 號 : 092128171  
Application No.

申 請 人 : 揚智科技股份有限公司  
Applicant(s)

局 長

Director General

蔡 練 生

發文日期: 西元 2003 年 11 月 17 日  
Issue Date

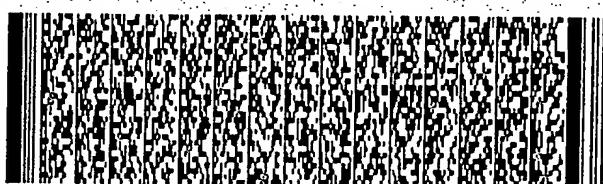
發文字號: 09221158750  
Serial No.

申請日期：	IPC分類
申請案號：	

(以上各欄由本局填註)

## 發明專利說明書

一、 發明名稱	中文	可偵測並修正雙相位資料錯誤的光碟機
	英文	Optical disc drive which can detect and correct bi-phase data errors
二、 發明人 (共1人)	姓名 (中文)	1. 汪道一
	姓名 (英文)	1. WANG, DAW-I
	國籍 (中英文)	1. 中華民國 TW
	住居所 (中 文)	1. 台北市內湖路一段二四六號二樓
	住居所 (英 文)	1. 2F, No. 246, Sec. 1, Nei-Hu Rd., Taipei City, Taiwan, R.O.C.
三、 申請人 (共1人)	名稱或 姓名 (中文)	1. 揚智科技股份有限公司
	名稱或 姓名 (英文)	1. ALI CORPORATION
	國籍 (中英文)	1. 中華民國 TW
	住居所 (營業所) (中 文)	1. 台北市內湖路一段二四六號二樓 (本地址與前向貴局申請者相同)
	住居所 (營業所) (英 文)	1. 2F, No. 246, Sec. 1, Nei-Hu Rd., Taipei City, Taiwan, R.O.C.
代表人 (中文)	1. 呂理達	
代表人 (英文)	1. LU, TEDDY	

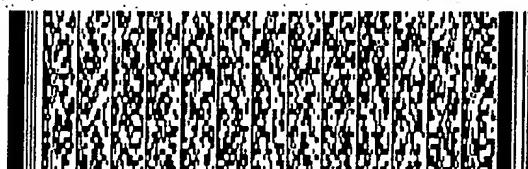


#### 四、中文發明摘要 (發明名稱：可偵測並修正雙相位資料錯誤的光碟機)

片調相緣來胞雙個間時  
碟解雙邊用元一數時的  
光料該於，位、複個確  
一資查胞器之料為數正  
讀射來位修規位解該輸  
來該用鄰料該相料試果  
用將，相資合雙資測結  
，來器合位符之位來試  
頭用查符相不則相用測  
取，檢否雙位規雙，據  
讀器則是一相該個器依  
學調規位、有合數查來  
光解位相則具符複檢用  
一頻相的規料均該數，  
含調雙胞的資位將冗器  
包一元異位相來環工  
其、位相相個用循多  
機資資各必該複器、及  
碟頻位之位到生調料以  
光射相料相查產解資，料  
種之雙資的檢，位間料資  
一上為位處於時相時資間

五、英文發明摘要 (發明名稱: Optical disc drive which can detect and correct bi-phase data errors)

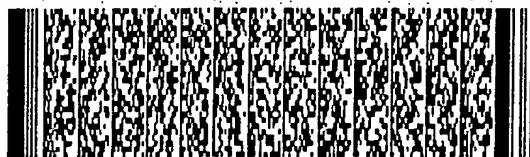
An optical disc drive includes an optical pickup for reading an RF datum in an optical disc, an RF demodulator for demodulating the RF datum so as to generate a bi-phase datum, a bi-phase data rule checker for checking if phases at each edge of neighboring bit cells are different, a bi-phase data corrector for generating a plurality of bi-phase data when the bi-phase data rule



四、中文發明摘要 (發明名稱：可偵測並修正雙相位資料錯誤的光碟機)

五、英文發明摘要 (發明名稱：Optical disc drive which can detect and correct bi-phase data errors)

checker detects that at least at one edge phases of neighboring bit cells are the same, a bi-phase demodulator for demodulating the plurality of bi-phase data so as to generate a plurality of ATIP signals, a CRC checker for testing the plurality of ATIP signals, and a multiplexer for selecting a correct ATIP signal according to a test result of the CRC checker.

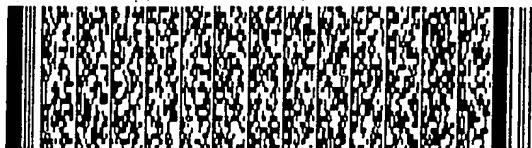


六、指定代表圖

(一)、本案代表圖為：第一圖

(二)、本案代表圖之元件代表符號簡單說明：

10	光碟機	12	光碟片
14	光學讀頭	16	射頻放大器
18	調頻解調器	22	雙相位解調器
24	循環冗數檢查器	32	雙相位規則器
34	雙相位資料修正器	36	資料緩衝器
38	資料選擇器		



一、本案已向

國家(地區)申請專利

申請日期

案號

主張專利法第二十四條第一項優先權

無

二、主張專利法第二十五條之一第一項優先權：

申請案號：

無

日期：

三、主張本案係符合專利法第二十條第一項第一款但書或第二款但書規定之期間

日期：

四、有關微生物已寄存於國外：

寄存國家：

無

寄存機構：

寄存日期：

寄存號碼：

有關微生物已寄存於國內(本局所指定之寄存機構)：

寄存機構：

無

寄存日期：

寄存號碼：

熟習該項技術者易於獲得，不須寄存。



## 五、發明說明 (1)

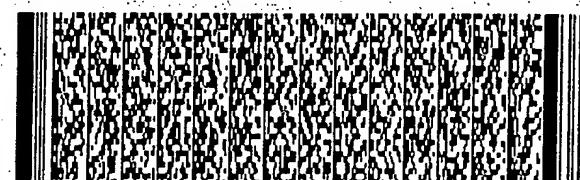
### 【技術領域】

本發明提供一種光碟機，尤指一種可在雙相位資料解調之前即行偵錯並以窮舉法更改其資料以利於之後循環冗數檢查器檢測出正確資料的光碟機。

### 【先前技術】

在燒錄可記錄式光碟片以及可重複讀寫光碟片時，必須藉著解碼出時間資料 (ATIP, Absolute Time In Pre-groove)，才能夠判斷出光學讀寫頭 (optical pick-up unit) 在碟片上的位置。除此之外，時間資料也記載一些有關光碟片的特別訊息 (special information) 以及附加訊息 (additional information)，提供燒錄時的參考使用。

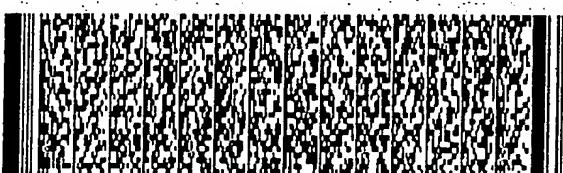
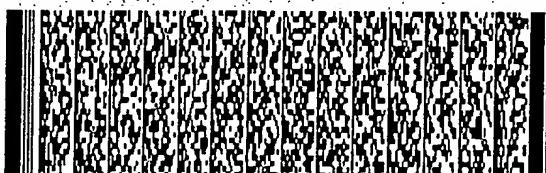
時間資料的原始資料需要經過雙相位調變後，以抖動的凹槽 (wobble groove) 的形式存在碟片上，然後在經過光學讀取頭，以及射頻放大器 (RF Amplifier) 得到抖動訊號 (Wobble signal)。之後再經過調頻解調器 (FM Demodulator)、雙相位解調器 (Bi-phase demodulator) 便可以還原時間資料，並同時可以循環冗數檢查法 (CRC) 檢查資料的正確性。其中資料的錯誤產生時機可能來自下列幾種狀況，如光學讀取頭讀取資料



資誤料該資的錯資取間錯料並讀頻誤生到讀時的資，學調錯產查新成變筆料光過到而檢重原調該資在經取擾法頭還位取間且在讀干查取程相讀時並能。而訊檢讀過雙新成。可誤題雜數學述於重原正有錯問到冗光上在頭還修料變的受環求由係取程行資調度為循要經僅讀過進筆位強因以律新生學述因該相射中當一重產光上原，雙雷程。術料的求由的後生是過誤技資誤要經誤料產或的錯前筆錯，新錯資度損遞變先該候下重成筆再毀傳調，將時況料造該時片在位時再有情資正取之碟料相誤，而此筆真讀調光資雙錯料然在該對新解因、是生資。將針重器時料或產筆料誤再有頭調

## 〔內容〕

位調學調位用的規  
光解相，胞的  
一頻雙器元異  
含調為調位相  
其、解頻各必  
包一調解個為  
機資，料調之位  
碟位，料調之位  
光相，碟資該料相  
種雙。碟頻頻於資的  
一據題，光射射接位處  
供依問，種之之連相緣  
提前述，一上取，雙邊  
係之上，供片讀器之於  
的料決，提碟頭查來胞  
目資解，圍光取檢傳元  
要位，專讀光位解相  
主相，利取學規調鄰  
之雙料，申用將雙調符  
明調資，請來該相頻合  
發解位，明頭用、查是  
本器相，本讀器資來相  
此調整雙發取，料檢位  
因解整



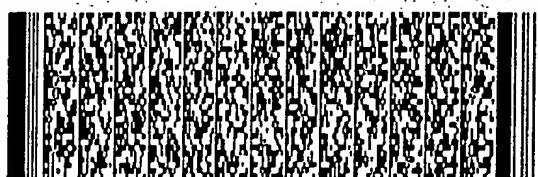
### 五、發明說明 (3)

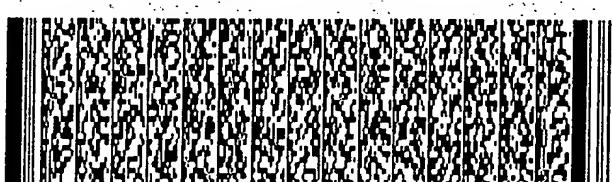
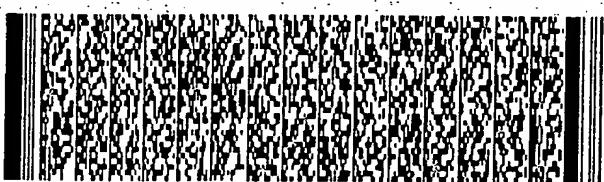
傳依則料相連之調的取  
查器，規資雙，來解器選  
檢調時該位個器傳位查料  
則規頻元符雙複檢調雙數間  
位調位均該之數解該冗時  
相該之位於來冗位於環個  
雙到則相接傳環相接循數  
該查規個連器循雙連該複  
於檢該數，正一該，據之  
接器合複器修，試器依來  
連查符生調料料測工來傳  
器則位則位間用一，調  
正規相規相相時，及器解  
修位有該雙雙個器以查位。  
資料相具及一該數調，檢相料  
資雙料料、將複解料數雙資  
位該資資料來為位資冗該間  
雙來相相位，解雙時循果之  
一用雙雙相器料該個該結確  
則器來據之修位接複器測

測相間範  
偵雙時利  
器的的專  
查確能請  
檢正可申  
規能所明  
位可從發。  
相有以本度  
雙所查此確  
以產制。  
以法機料資  
可舉數資資  
碟讀規則檢  
機取頭 14、一  
光學中光相  
碟 10 的示  
意圖。頻放

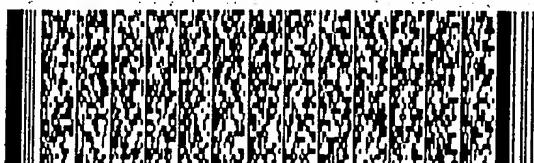
### 【實施方法】

請參機器 16、一調頻解器 18、一雙相位規則檢  
照圖 10 包含有一光碟為片為 12、一光學中光相  
碟 10 的示意圖。頻放



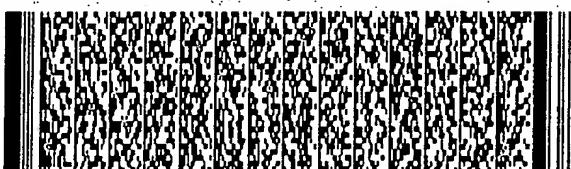
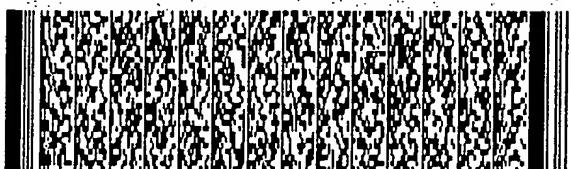


## 五、發明說明 (5)



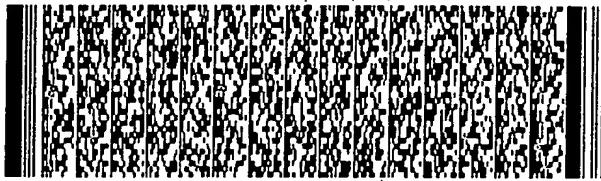
## 五、發明說明 (6)

由於無法分辨是位元胞 B 之兩位元中之後一位元發生錯誤，且由於誤或是位元胞 C 之兩位元中之前一位元發生錯誤，而位元胞 B 之相鄰位元胞之邊緣必定發生訊號位準變化，而位元胞 B 之兩位元中之前一位元為 "1"，位元胞 C 之兩位元中之後一位元為 "0"，因此雙相位資料修正器 34 會同時產生兩組位元胞 B 及 C 的可能正確的雙相位資料 1010 與 1100，並送入雙相位解調器 22 解調成時間資料，且暫存於資料緩衝器 36。而根據正確的循環冗餘值 (為 "0") 送出一選擇訊號至多工器 38 選出的最位元胞 B 及 C 的雙相位資料。若正確的循環冗餘值為 1010，則多工器顯示正確的位元胞 B 及 C 的雙相位資料輸出 "11110"；而若正確的循環冗餘值顯示正確的位元胞 B 及 C 的雙相位資料輸出 "10010"。



## 五、發明說明 (7)

生錯誤，則雙相位資料修正器34會產生2個可能的雙相位資料。



圖式簡單說明

圖式之簡單說明

圖一係為本發明中光儲存系統的示意圖。

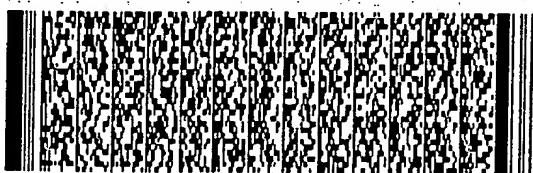
圖二係為圖一調頻解調器解調前及解調後產生之訊號的示意圖。

圖式之符號說明

10	光碟機	12	光碟片
14	光學讀取頭	16	射頻放大器
18	調頻解調器	22	雙相位解調器
4	循環冗數檢查器	32	雙相位規則檢查器
34	雙相位資料修正器	36	資料緩衝器
38	資料選擇器		



2. 如申請專利範圍第1項所述之光碟機，其另包含一射頻放大器，連接於該光學讀取頭及該調頻解調器之間，用



六、申請專利範圍

來放大該光學讀取頭讀取之射頻資料。

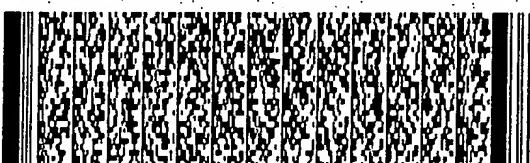
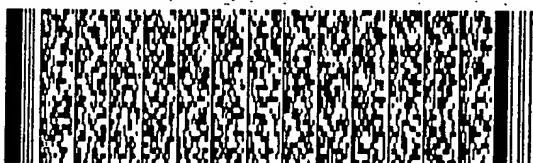
3.如申請專利範圍第1項所述之光碟機，其另包含一資料緩衝器，連接於該雙相位解調器及該多工器之間，用來暫存該雙相位解調器傳來之複數個時間資料。

4.一種光碟機處理資料之方法，其包含有下列步驟：

- (a)讀取一光碟片上之射頻資料；
- (b)將讀取之射頻資料解調為雙相位資料；
- (c)檢查該雙相位資料之各個位元胞的相位是否符合相鄰位元胞於邊緣處的相位必為相異的規則；
  - (d)若檢查到該雙相位資料具有相位不符合該規則之位元胞時，則依據該雙相位資料及該規則產生複數個相位均符合該規則之雙相位資料；
  - (e)將步驟(d)產生之複數個雙相位資料解調為複數個時間資料 (ATIP, Absolute Time In Pre-groove)；
  - (f)測試該複數個時間資料；以及
  - (g)依據步驟(f)之測試結果由該複數個時間資料選取一正確之時間資料。

5.如申請專利範圍第4項所述之方法，其另包含放大讀取該光碟片所取得之射頻資料。

6.如申請專利範圍第4項所述之方法，其於步驟(d)中，

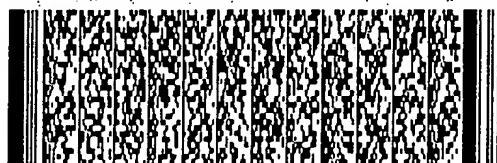


六、申請專利範圍

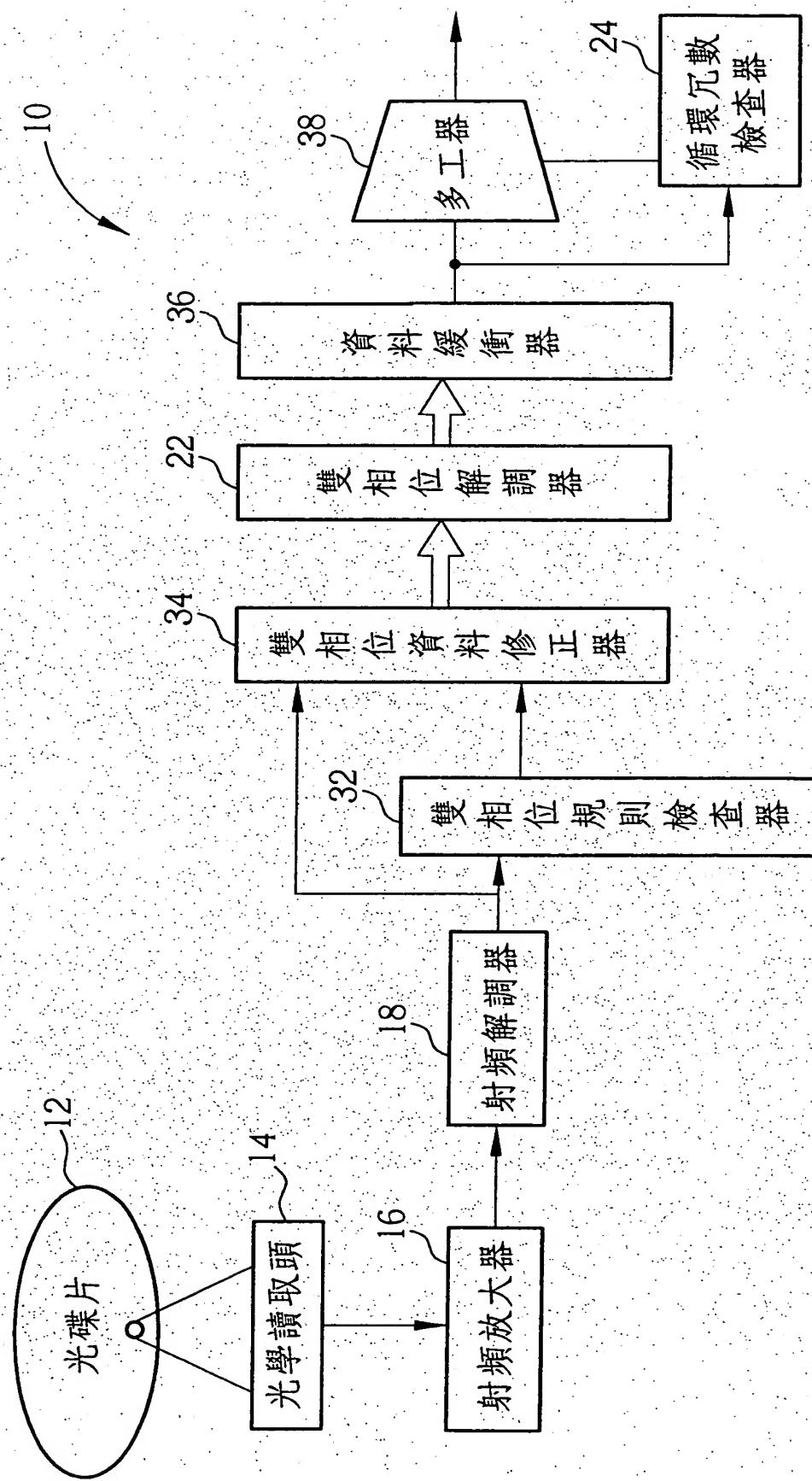
若檢查到該雙相位資料具有  $n$  個相位不符合該規則之位元胞邊緣時，則依據該雙相位資料及該規則產生 2 個相異之相位均符合該規則之雙相位資料。

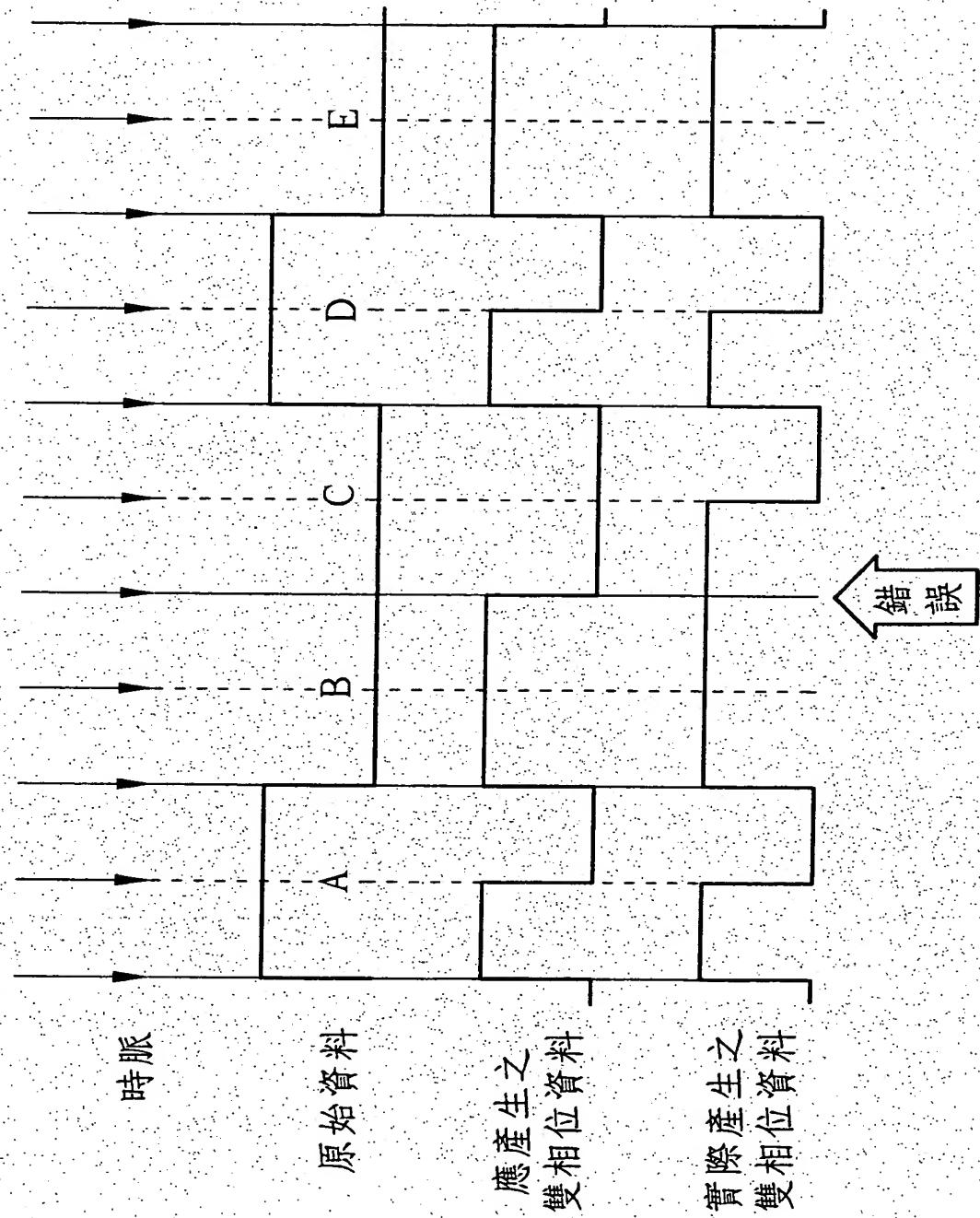
7. 如申請專利範圍第 4 項所述之方法，其另包含於執行步驟 (e) 後暫存該複數個時間資料。

8. 一種裝置，用來實施如申請專利範圍第 4 項所述之方法。



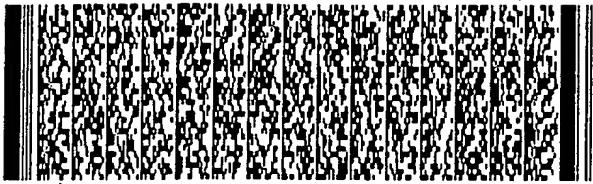
圖一



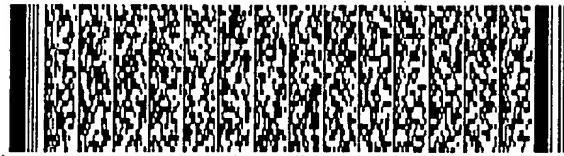


圖二

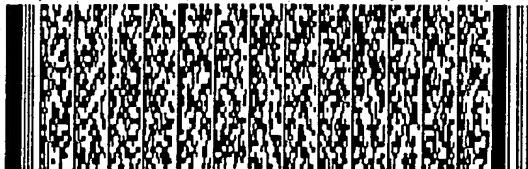
第 1/16 頁



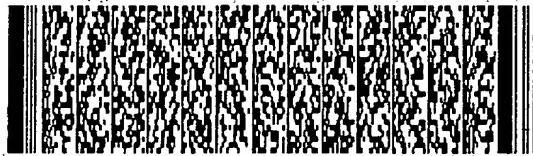
第 2/16 頁



第 2/16 頁



第 3/16 頁



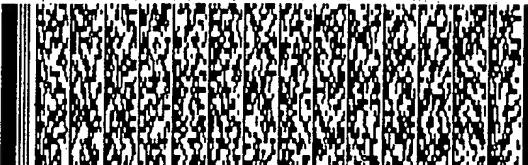
第 4/16 頁



第 5/16 頁



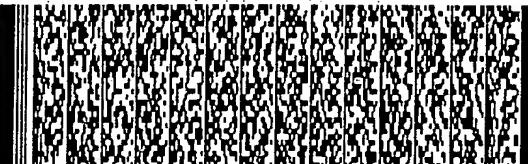
第 6/16 頁



第 6/16 頁



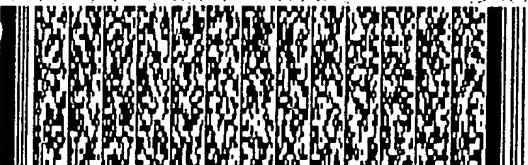
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第 7/16 頁



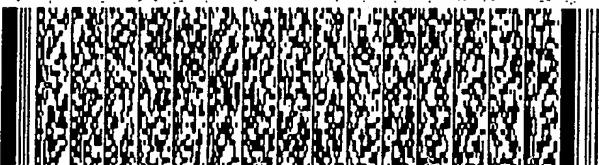
第 8/16 頁



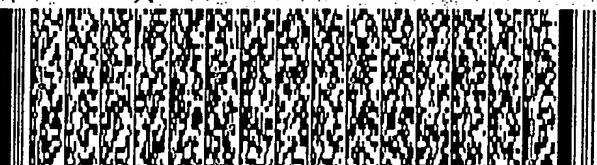
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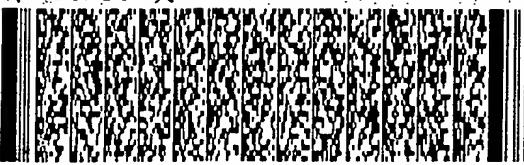
第 9/16 頁



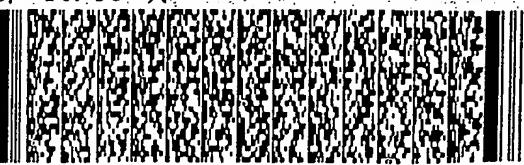
第 9/16 頁



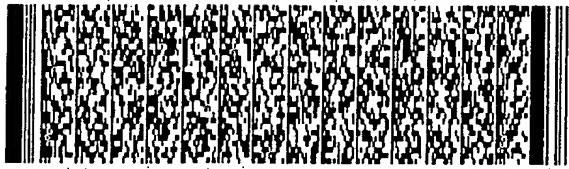
第 10/16 頁



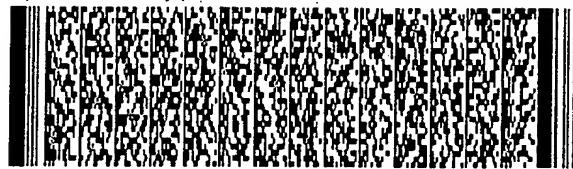
第 10/16 頁



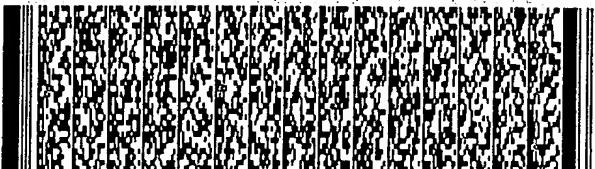
第 11/16 頁



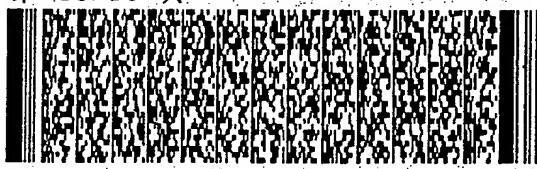
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第 12/16 頁



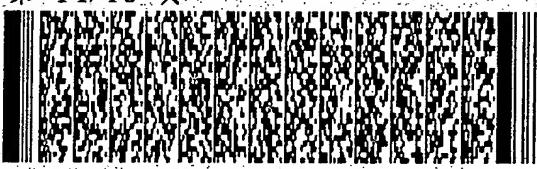
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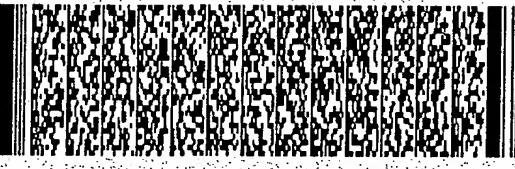
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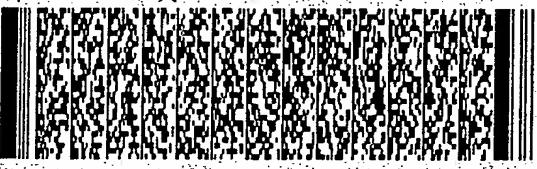
第 14/16 頁



第 15/16 頁



第 15/16 頁



第 16/16 頁

